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10/668,415

09/23/2003

Ronald S. Cok

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7590

11/29/2005

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EXAMINER

DI GRAZIO, JEANNE A

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,415

Applicant(s)

COK ET AL.

Examiner

Jeanne A. Di Grazio

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
4a) Of the above claim(s) 12-30 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11 and 31-34 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Claims

Claims 1-11 and 31-34 are pending per Amendment dated September 14, 2005. Independent claims 1 and 31 have been amended. Claims 12-30 have been withdrawn per Response of March 28, 2005.

Priority

No priority is claimed.

Drawings

The drawings were received on September 16, 2005. These drawings are Figure 5D.

Claim Objections

Claim 1 remains objected to because of the following informalities:

As to claim 1 (amended), Applicant recites “an asymmetric geometric element.” It is not clear in what sense the geometric element is asymmetric. Asymmetry is usually defined with respect to an axis or cross-section. In fact, it is respectfully noted that Applicant’s Figures (in particular Figures 5A, 5B and 5C) show a vertical cavity laser structure with asymmetric geometric element. However, the elements are symmetric at least about both an x and y axis.

Therefore, the geometric element does not appear to be entirely asymmetric.

For examination purposes, the Examiner interprets any geometric element to meet the claimed limitation.

Appropriate correction is required.

Thus, claim remains objected to.

Claim1 is objected to because of the following informalities:

As to claim 1 (amended), Applicant recites an asymmetric geometric element that receives emitted light from an excitation layer and produces polarized light.

Applicant has replaced a previously recited light emitting layer with the newly recited excitation layer.

However, it is noted that the excitation layer appears integral to the asymmetric geometric element – See Figure 2A where the asymmetric light emitting structure (6) includes excitation layer (17). The claim now reads as if the excitation layer and asymmetric geometric

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element are two different elements when, according to the figures, the excitation layer is an integral part of the asymmetric geometric element.

Also, please note that the claim as amended appears to be a list of elements without a required linking of the elements. It is not clear as to how the elements interrelate.

Appropriate correction is required.

Thus, claim 1 is objected to.

Claim 9 remains objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

As to claim 9, the limitation that the grating structure improves surface plasmon light output coupling is not a positive device limitation and thus fails to further limit claims 8 and 1.

Thus, claim 9 remains objected to.

Claim 31 remains objected to because of the following informalities:

As to claim 31 (amended), Applicant recites “a laterally asymmetric geometric element.” It is not clear in what sense the geometric element is asymmetric. Asymmetry is usually defined with respect to an axis or cross-section. In fact, it is respectfully noted that Applicant’s Figures (in particular Figures 5A, 5B and 5C) show a vertical cavity laser structure with asymmetric geometric element. However, the elements are symmetric at least about both an x and y axis.

Therefore, the geometric element does not appear to be entirely asymmetric.

For examination purposes, the Examiner interprets any geometric element to meet the claimed limitation.

Appropriate correction is required.

Thus, claim 31 remains objected to.

Claim 31 is objected to because of the following informalities:

As to claim 31 (amended), Applicant recites an asymmetric geometric element that receives emitted light from an excitation layer and produces polarized light.

Applicant has replaced a previously recited light emitting layer with the newly recited excitation layer.

However, it is noted that the excitation layer appears integral to the asymmetric geometric element – See Figure 2A where the asymmetric light emitting structure (6) includes excitation layer (17). The claim now reads as if the excitation layer and asymmetric geometric element are two different elements when, according to the figures, the excitation layer is an integral part of the asymmetric geometric element.

Also, please note that the claim as amended appears to be a list of elements without a required linking of the elements. It is not clear as to how the elements interrelate.

Appropriate correction is required.

Thus, claim 31 is objected to.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 11 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,727,014 (to Wang et al.) in view of United States Patent 6,154,479 (to Yoshikawa et al.).

As to claim 1 (amended), Wang teaches and discloses a vertical cavity surface emitting laser generating light with a defined direction of polarization and shows in Figure 2A a light emitting layer (109) *that is internal to a vertical cavity laser structure (101, 105)* (also internal to upper and lower conductive mirror regions 110 and 108) having a plurality of light emitting species, wherein the light emitting species *have a random orientation* (Column 7, Lines 40-50).

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Wang does not appear to explicitly specify an asymmetric geometric element that receives emitted light from an excitation layer and produces polarized light and means for excitation of the excitation layer.

Yoshikawa teaches and discloses vertical cavity surface emitting lasers (VCSELs) and VCSEL-based devices (Title, entire patent). Yoshikawa teaches that shape of the VCSEL is a major factor in the VCSEL's ability to emit polarized light (Background of the Invention, and Prior Art Figures 10 illustrating cross-sectional shapes that are ineffective). Polarization is effectively controlled by shape (Column 3, Lines 46-48). See also Figure 9, showing various shapes of cross-sections used for the VCSELs that are effective in polarizing light.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Wang in view of Yoshikawa for an asymmetric light emitting structure that effectively polarizes light and without the requirement of an additional polarizer (Please see also Column 2, Lines 27-36)(explaining problems with the prior art – that stability of polarization is critical in devices that do not use additional polarizers or polarization-sensitive devices because change of polarization may cause change of reflection at end surfaces of devices and thus an unstable system).

Thus, claim 1 is rejected.

As to claims 2-4, the light emitting layer is organic (Wang) and may include dyes and other materials may be added for protection against contamination.

Thus, claims 2-4 are rejected.

As to claim 5, as noted, the asymmetric geometric element is a vertical cavity surface emitting laser and is presumed to have asymmetric lateral confinement based on the shapes as disclosed, taught and suggested (Yoshikawa).

Thus, claim 5 is rejected.

As to claims 6 and 7, it may be presumed that the VCSEL is either organic or inorganic (Yoshikawa).

Thus, claims 6 and 7 are rejected.

As to claim 11, it may be presumed that the OLED light emitting layer of the prior art emits white light because it is drawn to color displays.

Thus, claim 11 is rejected.

As to claims 31-34, the method for producing polarized laser light would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made in view of the devices as taught and disclosed by Wang in view of Yoshikawa for effective light polarization and a stable system.

Thus, claims 31-34 are rejected.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,727,014 (to Wang) in view of United States Patent 6,154,479 (to Yoshikawa et al.) and further in view of United States patent 6,825,963 (to Kittaka et al.).

As to claims 8-10, Wang does not appear to explicitly specify that the asymmetric geometric element is a grating that improves surface plasmon light output coupling or that the asymmetric geometric element is a photonic crystal.

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Kittaka is drawn to an optical element wherein a photonic crystal or grating is used for propagating specific high-order band light (Column 1, Lines 1-13 and Column 2, Lines 43-46 and Column 6, Lines 32-35).

Therefore it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Wang in view of Kittaka for propagating specific high-order band light as noted.

Thus, claims 8-10 are rejected.

Response to Arguments

Applicant's arguments with respect to said claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

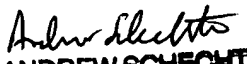
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio
Patent Examiner
Art Unit 2871

JDG


ANDREW SCHECHTER
PRIMARY EXAMINER